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SOUTHERN COMPANY
Energy to Serve Your World℠

December 16, 2005

Docket No.: 50-424

NL-05-2237

U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, D. C. 20555-0001

Vogtle Electric Generating Plant - Unit 1
Licensee Event Report 1-2005-004
Manual Reactor Trip Following Main Feedwater Regulating Valve Failure

Ladies and Gentlemen:

In accordance with the requirements of 10 CFR 50.73, Southern Nuclear Operating Company hereby submits a Vogtle Electric Generating Plant licensee event report for a condition that was determined to be reportable on October 17, 2005.

This letter contains no NRC commitments. If you have any questions, please advise.

Sincerely,

Don E. Grissette

DEG/RJF/daj

Enclosure: LER 1-2005-004

cc: Southern Nuclear Operating Company
Mr. J. T. Gasser, Executive Vice President
Mr. T. E. Tynan, General Manager – Plant Vogtle
RType: CVC7000

U. S. Nuclear Regulatory Commission
Dr. W. D. Travers, Regional Administrator
Mr. C. Gratton, NRR Project Manager – Vogtle
Mr. G. J. McCoy, Senior Resident Inspector – Vogtle

NRC FORM 366 (6-2004) U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB: NO. 3150-0104 EXPIRES: 06/30/2007

Estimated burden per response to comply with this mandatory collection request: 50 hours. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the Records and FOIA/Privacy Service Branch (T-5 F52), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to infocollects@nrc.gov, and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202, (3150-0104), Office of Management and Budget, Washington, DC 20503. If a means used to impose an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

LICENSEE EVENT REPORT (LER)

(See reverse for required number of digits/characters for each block)

1. FACILITY NAME	2. DOCKET NUMBER	3. PAGE
Vogtle Electric Generating Plant – Unit 1	05000-424	1 OF 4

4. TITLE

MANUAL REACTOR TRIP FOLLOWING MAIN FEED REGULATING VALVE FAILURE

5. EVENT DATE			6. LER NUMBER			7. REPORT DATE			8. OTHER FACILITIES INVOLVED	
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	MONTH	DAY	YEAR	FACILITY NAME	DOCKET NUMBER(S)
										05000
10	17	2005	2005	004	00	12	16	2005	FACILITY NAME	DOCKET NUMBER(S) 05000

9. OPERATING MODE	11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check all that apply)			
1	20.2201(b)	20.2203(a)(3)(i)	50.73(a)(2)(i)(C)	50.73(a)(2)(vii)
	20.2201(d)	20.2203(a)(3)(ii)	50.73(a)(2)(ii)(A)	50.73(a)(2)(viii)(A)
	20.2203(a)(1)	20.2203(a)(4)	50.73(a)(2)(ii)(B)	50.73(a)(2)(viii)(B)
	20.2203(a)(2)(i)	50.36(c)(1)(i)(A)	50.73(a)(2)(iii)	50.73(a)(2)(ix)(A)
10. POWER LEVEL	20-2203(a)(2)(ii)	50.36(c)(1)(ii)(A)	X 50.73(a)(2)(iv)(A)	50.73(a)(2)(x)
	20-2203(a)(2)(iii)	50.36(c)(2)	50.73(a)(2)(v)(A)	73.71(a)(4)
100%	20.2203(a)(2)(iv)	50.46(a)(3)(ii)	50.73(a)(2)(v)(B)	73.71(a)(5)
	20.2203(a)(2)(v)	50.73(a)(2)(i)(A)	50.73(a)(2)(v)(C)	OTHER Specify in Abstract below or in NRC Form 366A
	20.2203(a)(2)(vi)	50.73(a)(2)(i)(B)	50.73(a)(2)(v)(D)	

12. LICENSEE CONTACT FOR THIS LER

FACILITY NAME	TELEPHONE NUMBER (Include Area Code)
Tom Webb, Performance Analysis	(706) 826-3105

13. COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	[redacted]	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX
A	SJ	TD	M120		SJ	AFV	A609	Y

14. SUPPLEMENTAL REPORT EXPECTED			15. EXPECTED SUBMISSION DATE	MONTH	DAY	YEAR
YES (If yes, complete 15. EXPECTED SUBMISSION DATE)	X	NO				

16. ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines)

On October 17, 2005, at 1816 EDT, Unit 1 was manually tripped from 100% power due to a rapidly decreasing Steam Generator (SG) #2 water level. The Loop 2 Main Feedwater Regulating Valve (MFRV), 1FV0520, closed unexpectedly and could not be re-opened from the control room.

A review found that 1FV0520 closed due to an electronic circuit board failure resulting from moisture intrusion into the air operated valve's electro-pneumatic transducer. The transducer was mounted in an inverted manner that did not prevent water ingress and allow drainage. Washdown activities in this area allowed moisture into the transducer, causing the subsequent failure.

The failed transducer was replaced and mounted in the upright configuration. Furthermore, the appropriate procedure has been revised to ensure that electro-pneumatic transducers are mounted in the preferred position, and all washdowns within the power block have been halted until proper administrative controls have been established.

A) REQUIREMENT FOR REPORT

10 CFR 50.73 (a)(2)(iv)(A) requires this report because an unplanned actuation of the reactor protection system occurred.

B) UNIT STATUS AT TIME OF EVENT

At the time of this event, Unit 1 was in Mode 1 (Power Operation) at 100% rated thermal power. Other than that described herein, there was no inoperable equipment that contributed to the occurrence of this event.

C) DESCRIPTION OF EVENT

On October 17, 2005, at 1816 EDT, Unit 1 was manually tripped from 100% power due to a rapidly decreasing Steam Generator (SG) #2 water level. The Loop 2 Main Feedwater Regulating Valve (MFRV), 1FV0520, closed unexpectedly and could not be re-opened from the control room. Another anomaly occurred when, following the reactor trip, operators had to manually close the Loop 1 MFRV, 1FV0510, when it did not close after a feedwater isolation (FWI) signal had been initiated from the reactor trip signal. Auxiliary Feedwater (AFW) actuated as expected to provide water to the SGs and the unit was returned to normal operation in Mode 3 (Hot Standby). The NRC Operations Center was notified of this event on October 17, 2005, at 1918 EDT.

A review found that the Loop 2 Main Feedwater Regulating Valve (MFRV), 1FV0520, closed unexpectedly and could not be re-opened due to an electronic circuit board failure resulting from moisture intrusion in this air-operated valve's electro-pneumatic transducer. The transducer, installed in 2003 as a replacement for an obsolete model, was mounted in the inverted position. The vendor manual for the transducer states that it will operate in any position, but should be mounted upright if dust and water ingress effects are to be minimized. Located just outside the North Main Steam Valve Room, the Loop 2 MFRV (and transducer) is under a concrete overhanging roof with one side of the room exposed to the environment. The inverted mounted position exposed a vent in the base assembly of the transducer to the outside environment and was a direct pathway (through screens) to the internal electronics compartment of the body assembly.

Further investigation determined that, prior to the reactor trip, personnel had been cleaning the Main Feedwater Regulating Valve area with a hose and sprayer. Although the washdown was planned, approved, and personnel were mindful of the trip hazard signs, evidence suggests that water from this washdown penetrated through the vent in the tranducer to the electronic circuit board. When the failed electro-pneumatic transducer was unmounted, water dripped from the transducer. Inspection of a circuit

board revealed material deposits in the area of the vent hole and a burned electrical smell. The inverted mounting of the transducer and the washdown of the area were the causes of the electronics failure, which resulted in a loss of output from the transducer causing the Loop 2 MFRV, 1FV0520, to close.

Following the trip, the Loop 1 MFRV, 1FV0510, had to be manually closed from the control room when it did not close after receiving a feedwater isolation (FWI) signal resulting from the reactor trip. When de-energized, MFRV solenoid valve, 1FY0510A, would not vent out of its exhaust port and therefore had clearly failed to shift to exhaust air from the volume booster and the valve when the FWI signal was present. Testing of this failed solenoid was performed on the bench test and no shuttling of the solenoid valve could be observed with 30 psi pressure and cycling of the electrical source. Therefore, the cause of the MFRV failure to close was binding of this solenoid valve which prevented air from being vented from the MFRV diaphragm. Further internal investigation of the failed solenoid valve will be performed to determine the exact cause for the binding.

D) CAUSE OF EVENT

The Loop 2 Main Feedwater Regulating Valve (MFRV), 1FV0520, closed unexpectedly and could not be re-opened due to an electronic circuit board failure resulting from moisture intrusion in this air-operated valve's electro-pneumatic transducer. The transducer, installed in 2003 as a replacement for an obsolete model, was mounted in the inverted position. The inverted mounted position exposed a vent in the base assembly of the transducer to the outside environment and was a direct pathway (through screens) for moisture intrusion into the internal electronics compartment of the body assembly.

E) ANALYSIS OF EVENT

Operators responded properly to control feedwater flow and stabilized the unit in Mode 3. Based on these considerations, there was no adverse effect on plant safety or on the health and safety of the public as a result of this event. Operators closed MFRV 1FV0510 after its initial failure to close automatically. However, the system's safety function had already been completed by the closure of the Loop 1 Main Feedwater Isolation Valve. In addition, the AFW system actuated as designed following initiation of the reactor trip.

This event does not represent a safety system functional failure.

F) CORRECTIVE ACTION

1) The failed transducer was replaced and mounted in the upright configuration.

2) Transducers for the remaining three (3) MFRVs in Unit 1 were inspected and were found to be mounted in the upright position. The Unit 2 transducers are of a different design and are not susceptible to this kind of failure.

3) Procedure 22283-C, "Air Operated Valve & Dampers Flowscanner Checkout," has been revised to ensure that electro-pneumatic transducers are mounted in the upright position unless evaluated on a case-by-case basis. These evaluations will consider environmental conditions and the need for housekeeping activities.

4) All washdowns within the power block have been halted until proper administrative controls have been established.

G) ADDITIONAL INFORMATION

1) Failed Components:
I/P Transducer manufactured by Masoneilan International, Inc.
Model #7000.
Solenoid valve manufactured by ASCO Valve Co.
Model #NP8321A5E

2) Previous Similar Events:
There have been no previous similar events in the last three years.

3) Energy Industry Identification System Codes:
Main Feedwater System – SJ
Auxiliary Feedwater System – BA

4) The MFRV 1FV0510 solenoid valve was replaced and the failed solenoid is being sent to the vendor for failure analysis. Additional corrective action will be initiated upon receipt of failure analysis.